

1.0 INTRODUCTION

Tetra Tech EM Inc. (Tetra Tech), under Contract No. 006244 with the Utah Department of Environmental Quality (UDEQ) Division of Solid and Hazardous Waste (DSHW), was issued Work Order 002 to perform a screening level ecological risk assessment (SLERA) of air emissions from the treatment of munitions at the Tooele Chemical Agent Disposal Facility (TOCDF) and Chemical Agent Munitions Disposal System (CAMDS). TOCDF and CAMDS are located at the Deseret Chemical Depot (DCD) in Tooele County, Utah. The stockpiled munitions include organophosphate nerve agents and sulfur mustard blister agents. The nerve agents include isopropyl methylphosphonofluoridate (GB) and O-ethyl-S-[2-diisopropylaminoethyl] methylphosphonothiolate (VX). Sulfur mustard is composed of a mixture of three chemical agents: (1) bis(2-chloroethyl) sulfide (H), (2) HD (distilled H), and (3) HT (a mixture of HD and bis-2-[chloroethylthioethyl]ether [T]).

Under task 03 of the work order, Tetra Tech was authorized to prepare a protocol (“the protocol”) describing the technical procedures that will be used to perform a Phase I (screening-level) ecological risk assessment (ERA) on emissions from munitions incineration. This protocol, which is a companion to the TOCDF human health risk assessment (HHRA) protocol (Tetra Tech 2001b), is based on the U.S. Environmental Protection Agency (U.S. EPA) *Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities* (U.S. EPA 1999), which reflects U.S. EPA (1998) *Guidelines for Ecological Risk Assessment*; however, there is no approved technical guidance for specifically evaluating the ecological risk of air emissions from the combustion of hazardous waste. The U.S. EPA Office of Solid Waste, which is responsible for implementing the Resource Conservation and Recovery Act (RCRA), recommends using U.S. EPA (1999) for conducting an ERA on emissions from RCRA hazardous waste combustion units. This draft final version of the protocol includes changes to the June 28, 2002, version based on comments by DSHW and U.S. EPA. The protocol also reflects comments by U.S. Army Center for Health Prevention and Preventive Medicine (USACHPPM) on an early version prepared in 1998 by Midwest Research Institute (1998).

The Phase I ERA is a tool for DSHW to evaluate the protectiveness of the operating conditions of the RCRA permit for DCD. The DSHW has the authority and responsibility to establish permit conditions as necessary to protect human health and the environment (Utah Administrative Code [UAC] R315-3-23; Title 40 Code of Federal Regulations [CFR] 270.32(b)(2)).

The Phase I ERA will determine cumulative hazards (across agent campaigns) based on weighted-average emission rates for the TOCDF incinerators and worst-case emission rates for the CAMDS incinerator sources. Other sources at the facilities, including the TOCDF brine reduction area (BRA) and heating, ventilation, and air conditioning (HVAC) system, and the CAMDS HVAC system, will be evaluated using source-specific emission rates. Agent campaign-specific emission rates for the incinerators will not be used in the Phase I ERA because the draft HHRA (Tetra Tech 2001a) indicated that summing agent-specific risk estimates greatly overestimates risk. The results of the revised HHRA indicated the use of the weighted-average and worst-case emission rates provided more realistic estimates of risk (Tetra Tech 2002a). The emission rates are based on (1) empirical data from trial and test burns, and (2) values extrapolated from similar units. For sources evaluated with extrapolated emission rates, DSHW will update the SLERA when trial burn data are collected.

The objectives of the protocol are to describe the detailed technical procedures, assumptions, and parameter values that will be used to assess ecological risk of compounds of potential concern (COPC). The protocol is divided into six main sections and five appendices, as follows:

- Section 2–Facility Characterization
- Section 3–Problem Formulation
- Section 4–Measures of Exposure
- Section 5–Measures of Effect
- Section 6–Risk Characterization and Uncertainties
- Section 7–Conclusions
- Appendix A–Emission Rate Spreadsheets
- Appendix B–Physical and Chemical Properties of COPCs
- Appendix C–Equations and Variable Values for Calculating Media Concentrations
- Appendix D–Parameter Values for Calculating COPC Doses
- Appendix D–COPC Toxicity Reference Values